application, *i.e.*, March 26, 1999 (JP11-083744) and December 16, 1999 (JP11-357283). The Examiner states that Applicant cannot rely upon the foreign priority papers to overcome the rejections because translations of the priority papers have not been made of record.

Accordingly, pursuant to 37 C.F.R. § 1.55(a)(4), Applicant submits herewith English translations of the certified copies of JP11-083744 and JP11-357283, submitted on June 2, 2000, accompanied by the Declaration by Ms. Kimiko Tada . JP11-357283 is a division of JP11-083744.

All of the features recited in the claims, except for claim 3, are disclosed in JP11-083744 and, therefore, are entitled to the priority date of March 26, 1999 which is earlier than the filing date of *Watkins*. Accordingly, *Watkins* is not a proper prior art reference under 35 U.S.C. § 102(e) against the present invention and, therefore, the rejections should be withdrawn.

Furthermore, although the additional feature recited in claim 3 is disclosed in JP11-357283 filed December 16, 1999, claim 1 from which claim 3 depends is distinct from the temperature compensated NMR magnet of *Watkins*, regardless of the filing dates, as discussed below and, therefore, claim 3 is not anticipated by *Watkins*.

Claim Rejection under 35 U.S.C. § 102(e)

As discussed above, *Watkins* is not prior art against the present invention. Even if, *arguendo*, *Watkins* were proper prior art in terms of filing date, the present invention is not anticipated by *Watkins* for the reasons discussed below.

The magnetic field correcting unit of the present invention generates ***an additional magnetic field*** that makes a spatial distribution of the static magnetic field uniform. In other words, the magnetic field correcting unit corrects non-uniformity (spatial non-uniformity) of the static magnetic field caused by temperature change of the static magnetic field generating unit and/or surrounding space of it (*see*, for example, page 4, lines 17-19; page 5, lines 14-18; page 6, lines 10-12; and page 13, lines 9-24 of the present specification).

On the other hand, *Watkins* only discloses a ***correction coil 166 wound around peripheral portions of B_0 magnet 140***, *i.e.*, each of upper magnet 162 and lower magnet 164, respectively, which provides ***compensation flux*** (col. 4, lines 44-51 and Fig. 2). This kind of coil cannot correct spatial distribution or non-uniformity of the static magnetic

field as the magnetic field correction unit of the present invention can (cf. Fig. 1 and 7 of the present specification).

Thus, the magnetic resonance imaging apparatus of the present invention is distinct from the temperature compensated NMR magnet disclosed by *Watkins* and, therefore, is not anticipated by the latter.

Accordingly, Applicant respectively requests that the claim rejections under 35 U.S.C. § 102(e) as being anticipated by *Watkins* be withdrawn.

Applicant believes that all claims 1-31 are now in condition for allowance, early notification of which is earnestly requested.

No fee other than the one (1)-month extension fee is believed to be due for this submission. However, should any fee be required, please charge the same to Pennie & Edmonds LLP Deposit Account No. 16-1150.

Respectfully submitted,

Date August 23, 2002

24,576

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Enclosures

EXHIBIT A

MARKED-UP VERSION OF THE AMENDED PARAGRAPHS

(Filed August 23, 2002)

Application Serial No. 09/535,241

On page 2, please amend the paragraph beginning "On the other hand," as follows:

On the other hand, two shimming methods for improving the uniformity of the static magnetic field are available. One is a passive shimming that disposes a magnetic piece to cancel the **[ununiformity]** **non-uniformity** of the static magnetic field. The other is active shimming that changes the current passed through a shim coil in response to uneven variation in the static magnetic field. One proposed active shimming ascertains the level of magnetic field **[ununiformity]** **non-uniformity** by analyzing an NMR signal detected from the examined object, and controls the current passed through the shim coil based on this **[ununiformity]** **non-uniformity** level. This is disclosed in, for example, U.S. Patent No.5530352.

On page 3, amend the paragraph beginning "On the other hand," as follows:

On the other hand, in the method of reducing the magnetic field **[ununiformity]** **non-uniformity** by using an NMR signal from the examined object, it is necessary to adjust the uniformity of the magnetic field after the object has been disposed in the magnetic field. This lowers the efficiency of the MRI examination. Further, the **[ununiformity]** **non-uniformity** of the magnetic field is different depending on the part of the patient to be examined and the disposed position of the patient. Therefore, this method involves complex adjustments, and is incapable of efficiently overcoming the **[ununiformity]** **non-uniformity** due to temperature variations.

On pages 4 through 5, amend the paragraph beginning "According to the above aspect," as follows:

According to the above aspect, the magnetic field correcting unit is controlled based on a detected temperature. The **[ununiformity]** **non-uniformity** of the static magnetic field is corrected based on this control. Therefore, it is possible to eliminate **[ununiformity]** **non-uniformity** of the magnetic field due to temperature variations with good response. Accordingly, it is possible to cope with substantial variations in temperature or sudden changes in temperature. It is also possible to eliminated the need for a high-temperature bath for keeping the static magnetic field generating unit at a constant temperature. Therefore, a large space for disposing the object to be examined can be secured. This makes it possible to improve the efficiency of interventional work.

On page 5, amend the paragraph beginning "Preferably," as follows:

Preferably, the control unit controls the magnetic field correcting unit based on a temperature characteristic of the **[ununiform]** **non-uniform** component of the space distribution of the static magnetic field. The temperature characteristic of the **[ununiform]** **non-uniform** component can be ascertained in advance. The control unit calculates the **[ununiform]** **non-uniform** component at a detected temperature based on the detected temperature and the temperature characteristic, and controls the magnetic field correcting unit so as to generate an additional magnetic field that cancels the component.

On page 6, amend the paragraph beginning "Further," as follows:

Further, according to a preferred embodiment of the MRI apparatus of the present invention, the temperature detecting unit detects temperatures of at least two positions including the static magnetic field generating unit and/or its surroundings. The temperature characteristic of the **[ununiform]** **non-uniform** component of the space distribution of the static magnetic field is obtained in advance for each temperature change at each position. The control unit calculates the **[ununiform]** **non-uniform** component at the detected

temperature from the temperature detected at each position and the temperature characteristic. The control unit then corrects the magnetic field correcting unit so as to generate an additional magnetic field that cancels total **[ununiformity]** **<u>non-uniformity</u>** of the respective positions.

On pages 6 through 7, amend the paragraph beginning "According to another aspect" as follows:

According to another aspect of the present invention, there is provided a method for maintaining uniformity of a static magnetic field, which is a method of maintaining uniformity of a static magnetic field generated by a static magnetic field generating unit in an MRI apparatus, by generating an additional magnetic field. This method includes the steps of: obtaining a temperature dependence of **[an ununiform]** **<u>a non-uniform</u>** component of a space distribution of a static magnetic field; detecting a temperature of the static magnetic field generating unit; and obtaining an intensity of the additional magnetic field based on the detected temperature and the temperature dependence.

On page 11, amend the paragraph beginning "In the embodiment" as follows:

In the embodiment shown in Fig. 1, the thermometer 13 is disposed on the iron yoke 17 of the static magnetic field generating magnet 2, and detects the temperature of the iron yoke. The shim coil 15 consists of one or a plurality of coils such as a coil that generates a magnetic field of a z term and a coil that generates magnetic field of xy term corresponding to **[an ununiform]** **<u>a non-uniform</u>** component of the static magnetic field. Each shim coil 15 is disposed between the superconducting coils 16 and the gradient magnetic field coils 3. The gradient magnetic field coils 3 may also work as shim coils that generate a linear term correction magnetic field.

On page 11, amend the paragraph beginning "At first," as follows:

At first, a relationship between temperature and the **[ununiformity]** **non-uniformity** of the magnetic field, that is, the temperature characteristic of the **[ununiformity]** **non-uniformity** of the magnetic field is measured in advance. For measuring the temperature characteristic of the **[ununiformity]** **non-uniformity** of the magnetic field, the magnitude of the **[ununiformity]** **non-uniformity** (error magnitude) generated by change in temperature is measured for each component of each shim coil (step 27).

On page 12, amend the paragraph beginning "Such ununiformity" as follows:

Such **[ununiformity]** **non-uniformity** of the magnetic field is the sum of the **[ununiformity]** **non-uniformity** of each component such as a linear term component of y (hereinafter to be referred to as y component) and a quadratic term component of z (hereinafter to be referred to as z^2 component). In the case of the y component, for example, the uniformity changes by approximately 6 ppm for a temperature change of 1°C, as shown in Fig. 4. The uniformity changes by approximately 3 ppm in the case of the z^2 component. At step 27, temperature characteristic is obtained for each **[ununiformity]** **non-uniformity** component of the magnetic field (hereinafter to be referred to as error component) in advance.

On page 13, amend the paragraph beginning "Then," as follows:

Then, a shim current that generates a correction magnetic field for canceling the change of the error component is calculated for each shim coil. This current is supplied to the shim coil (steps 31, 32). In the example shown in Fig. 4, when the temperature difference is + 1°C, the change of the error component of the z^2 component is 3 ppm. Therefore, when the shim current that generates - 3 ppm (3/5 ampere in the above example) is applied to the shim coil of the z^2 component (shim characteristic 5 ppm/A), it is possible to cancel the **[ununiformity]** **non-uniformity** of the static magnetic field attributable to the temperature variations.

On page 18, amend the paragraph beginning "In the above embodiment," as follows:

In the above embodiment, only the case of correcting the **[ununiformity]** **non-uniformity** component of the magnetic field due to the temperature variations of the magnet has been explained. However, it may be performed together with the conventional active shimming method. The active shimming may be a method that detects NMR signals of the part of the object to be examined, analyzes the detected NMR signal, and applies a correction current to the shim coil to improve the uniformity of the magnetic field. Such an embodiment will be explained hereinafter with reference to Fig. 6.

On pages 18 through 19, amend the paragraph beginning "In this embodiment," as follows:

In this embodiment, **[ununiformity]** **non-uniformity** of the magnetic field due to temperature variations is corrected prior to the examination by the MRI apparatus (601 - 603). The temperature characteristic of each error component and shim characteristic of each shim coil are obtained in advance in a similar manner to that shown in Fig. 2. Before the examination, the temperature of the magnet is measured (601). The difference between the temperature at which the magnet achieves optimum uniformity of the magnetic field (reference temperature, for example 23°C) and the measured temperature is obtained. The magnitude of the error component of the magnetic field is calculated from the temperature characteristic of the error component obtained in advance (602). Next, a shim current that generates a correction magnetic field for compensating for the magnetic field error component is obtained, and this current is applied to the shim coil (603). At this stage, the thus obtained uniformity of the magnetic field is similar to the uniformity at the reference temperature.

On page 20, amend the paragraph beginning "According to this embodiment," as follows:

According to this embodiment, it is possible to correct not only the **[ununiformity]** **non-uniformity** of the magnetic field due to temperature variation of the magnet, but also the **[ununiformity]** **non-uniformity** of the magnetic field due to the influence of the magnetization factor of the examination area of the patient. Therefore, an MRI apparatus that achieves high uniformity of magnetic field can be provided. Using the MRI apparatus, a high-quality image can be obtained even when the imaging method requires high uniformity of the magnetic field, such as imaging in which only a fat signal is suppressed or an EPI.

On pages 21 through 22, amend the paragraph beginning "In the thus constructed" as follows:

In the thus constructed MRI apparatus, the process of maintaining the uniformity of the static magnetic field is similar to that shown in Fig. 2. First, the temperature characteristic of the magnetic field error component is measured (step 27), and the shim characteristic of the shim coil is measured (step 28). At step 27, when measuring the temperature characteristic of the magnetic field error component, the relationship between the temperature of an iron yoke 17 (static magnetic field generating magnet) and the magnetic field **[ununiformity]** **non-uniformity** and the relationship between the difference of temperature between the iron yoke 17 and the connection pipe 19' and the magnetic field **[ununiformity]** **non-uniformity** are obtained respectively in advance.

On page 22, the paragraph beginning "Namely," as follows:

Namely, for the temperature of the iron yoke 17, the **[ununiformity]** **non-uniformity** (error) generated due to temperature variation is measured for each component corresponding to the shim coil. Similarly, for variation in the temperature difference between the iron yoke 17 and the connection pipe 19',

the **[ununiformity]** **<u>non-uniformity</u>** (error) generated due to temperature variation is measured for each component corresponding to the component of the shim coil.

On page 23, amend the paragraph beginning "The ununiformity" as follows:

The **[ununiformity]** **<u>non-uniformity</u>** of the magnetic field attributable to the temperature variation is obtained as the sum of the following three factors: the **[ununiformity]** **<u>non-uniformity</u>** of the linear term component of y (hereinafter referred to as y component), the quadratic term component of z (hereinafter referred to as z^2 component) and the quartic term component of z (hereinafter referred to as z^4 component). As shown in Fig. 9, when the temperature of the whole static magnetic field generating magnet 2 changes by 1°C, for example, the y component changes by approximately 6 ppm, the z^2 component changes by approximately 3 ppm, and the z^4 component changes by approximately 0.5 ppm. On the other hand, as shown in Fig. 10, when the temperature difference between the iron yoke 17 and the connection pipe 19' changes, the y component changes by approximately -1.5 ppm, the z^2 component changes by approximately 6 ppm, and the z^4 component changes by approximately 3 ppm. As explained above, at step 27, the temperature characteristic of each **[ununiformity]** **<u>non-uniformity</u>** component of the magnetic field (hereinafter referred to as an error component) is obtained in advance.

On page 24, the paragraph beginning "The shim current" as follows:

The shim current that generates a correction magnetic field for canceling the change of the error component is calculated for each shim coil. This current is then supplied to the shim coil (steps 31, 32). In the examples shown in Fig. 9 and Fig. 10, it is assumed that the temperature of the whole static magnetic field generating magnet 2 has increased by +1°C from the reference temperature 23°C, and the temperature difference between the iron yoke 17 and the connection pipe 19' is zero. In this case, the error component

change of the z^2 component is 3 ppm. Therefore, a shim current that generates -3 ppm (3/5 ampere in the preceding embodiment) is applied to the shim coil of the z^2 (shim characteristic 5 ppm/A) so as to cancel the **[ununiformity]** **<u>non-uniformity</u>** of the static magnetic field attributable to the temperature variations of the whole static magnetic field generating magnet 2. In this case also, provided that the shim coil characteristic of the z^2 is 5 ppm/A in a similar manner to that of the first embodiment, it is possible to cancel the **[ununiformity]** **<u>non-uniformity</u>** of the static magnetic field attributable to the temperature characteristics, by applying the shim current of 3/5 ampere.

On pages 24 through 25, amend the paragraph beginning "Another example" as follows:

Another example is now considered where the temperature of the space in which the static magnetic field generating magnet 2 is disposed has changed suddenly from the reference temperature 23°C to 25°C. **[Ununiformity]** **<u>Non-uniformity</u>** of the magnetic field in this case will be corrected immediately after this temperature change. The temperature of the iron yoke 17 is, for example, 23.5°C, which is close to 23°C. However, as the superconducting coil 16 and the connection pipe 19' are constructed of aluminum having a small thermal time constant, their temperature changes to 24.5°C. In this transient state, it is necessary to correct for a total of 8.5 ppm. This is the sum of the error component change of 1.5 ppm of the z^2 at 23.5°C shown in Fig. 9, and the error component change of 7 ppm of the z^2 due to the temperature difference 1°C between the iron yoke 17 and the connection pipe 19' as shown in Fig. 10. When the temperatures of the iron yoke 17 and the connection pipe 19' have become 25°C with passage of time, only the error component change of 6 ppm of z^2 is corrected based on Fig. 9.

On page 31, amend the paragraph beginning "As explained" as follows:

As explained in the above, according to the present invention, the uniformity of the magnetic field is corrected based on changes in the temperature of the magnet or its surroundings. Therefore, it is possible to

maintain the uniformity of the magnetic field at a high level. Particularly, when the temperatures of at least two positions are detected, it is possible to cope with complex and **[ununiform]** **non-uniform** temperature changes. As a result, the reliability of the MRI examination data can be increased. Further, according to the present invention, it is possible to efficiently correct only the **[ununiformity]** **non-uniformity** of the magnetic field attributable to temperature variations, which reduces the imaging time.

EXHIBIT B

MARKED-UP VERSION OF THE AMENDED CLAIMS

(Filed August 23, 2002)

Application Serial No. 09/535,241

Please amend claims 5 and 8 to read as follows:

5. (Amended) A magnetic resonance imaging apparatus according to claim 1, wherein the control unit comprises a voltage generating unit that generates a voltage corresponding to **[an ununiformity]** **<u>a non-uniformity</u>** component of the magnetic field at the temperature detected by the temperature detecting unit, a voltage/current converter that converts the voltage output by the voltage generating unit to current, and a supplying unit that supplies to the magnetic field correcting unit the current generated from the voltage/current converter.

8. (Amended) A method of maintaining a static magnetic field generated by a static magnetic field generating unit uniform in a magnetic resonance imaging apparatus, by generating an additional magnetic field, the method comprising the steps of:

calculating a temperature dependence of **[an ununiform]** **<u>a non-uniform</u>** component of a space distribution of the static magnetic field;

detecting a temperature of the static magnetic field generating unit; and

calculating a strength of the additional magnetic field based on the detected temperature and the temperature dependence.

EXHIBIT C

THE CLAIMS THAT WILL BE PENDING UPON ENTRY OF THE PRESENT AMENDMENT

(Filed August 23, 2002)

Application Serial No. 09/535,241

1. A magnetic resonance imaging apparatus comprising:

a static magnetic field generating unit that generates a static magnetic field of a constant magnetic field intensity;

an gradient magnetic field generating unit that generates a magnetic field strength gradient;

a high-frequency magnetic field generating unit;

a detecting unit that detects nuclear magnetic resonance signals generated from an object to be examined; and

a display unit that displays a result of the detection, wherein

the magnetic resonance imaging apparatus further comprises:

a magnetic field correcting unit that generates an additional magnetic field for making uniform a space distribution of the static magnetic field;

a temperature detecting unit that detects a temperature of the static magnetic field generating unit and/or surroundings thereof; and

a control unit that controls the magnetic field correcting unit based on the temperature detected by the temperature-detecting unit.

2. A magnetic resonance imaging apparatus according to claim 1,

wherein the control unit has a temperature setting unit that sets a temperature detected by the temperature-detecting unit.

3. A magnetic resonance imaging apparatus according to claim 1,

wherein the temperature detecting unit detects temperatures of at least two positions.

4. A magnetic resonance imaging apparatus according to claim 1,

wherein the magnetic field correcting unit comprises a shim coil for generating an additional magnetic field and a shim power source that supplies a current to the shim coil.

5. (Amended) A magnetic resonance imaging apparatus according to claim 1,

wherein the control unit comprises a voltage generating unit that generates a voltage corresponding to a non-uniformity component of the magnetic field at the temperature detected by the temperature detecting unit, a voltage/current converter that converts the voltage output by the voltage generating unit to current, and a supplying unit that supplies to the magnetic field correcting unit the current generated from the voltage/current converter.

6. A magnetic resonance imaging apparatus according to claim 1,

wherein the magnetic field correcting unit generates at least one additional magnetic field of linear term of y, quadratic term of z and quartic term of z, where z is the direction of the static magnetic field and y is one direction orthogonal to z.

7. A magnetic resonance imaging apparatus according to claim 1,

wherein the temperature detecting unit is disposed near the static magnetic field generating unit and/or in a room where the static magnetic field generating unit is placed.

8. (Amended) A method of maintaining a static magnetic field generated by a static magnetic field generating unit uniform in a magnetic resonance imaging apparatus, by generating an additional magnetic field, the method comprising the steps of:

calculating a temperature dependence of a non-uniform component of a space distribution of the static magnetic field;

detecting a temperature of the static magnetic field generating unit; and

calculating a strength of the additional magnetic field based on the detected temperature and the temperature dependence.

9. A method according to claim 8,

wherein steps from the temperature detection to the generation of the additional magnetic field are conducted at all times.

10. A method according to claim 8,

wherein steps from the temperature detection to the generation of the additional magnetic field are conducted at predetermined time intervals.

11. A method according to claim 8 further comprises the steps of:

measuring NMR signals generated from an object to be examined;

calculating a magnetic field error component attributable to the object using the measured NMR signals;

calculating a strength of the additional magnetic field based on the error component attributable to the object; and

generating an additional magnetic field having an intensity equal to that of the sum of that obtained based on the detected temperature and the temperature dependence and that calculated based on the error component.

12. A method according to claim 8,

wherein the additional magnetic field is at least one magnetic field of linear term of y, quadratic term of z and quartic term of z, where z is the direction of the static magnetic field and y is one direction orthogonal to z.

13. A magnetic resonance imaging apparatus comprising:

a static magnetic field generating means that generates a static magnetic field of a constant magnetic field intensity, and

a uniformity correcting means that detects a temperature change affecting the uniformity of the magnetic field generated by the static magnetic field generating means and generates a magnetic field for canceling a change of the magnetic field intensity due to a temperature change based on the detected temperature change.

14. (New) A magnetic resonance imaging apparatus comprising:

a static magnetic field generating unit for generating a homogeneous static magnetic filed in an inspection space;

a gradient magnetic field generating unit for generating a magnetic field strength gradient;

a high frequency magnetic field generating unit;

a detecting unit for detecting nuclear magnetic resonance signals generated from an object to be examined;

a display unit for displaying an image as an result based on the detection;

a temperature detecting unit for detecting a temperature of said static magnetic field generating unit and/or surroundings thereof;

a magnetic field correcting unit for generating an additional magnetic field for correcting non-uniformity of said static magnetic field being caused by temperature change of said static magnetic field generating unit and/or surrounding space of it; and

a control unit for controlling said magnetic field correcting unit based on the temperature detected by said temperature detecting unit.

15. (New) A magnetic resonance imaging apparatus according to claim 14,

wherein the control unit has a temperature setting unit that sets a temperature detected by the temperature-detecting unit.

16. (New) A magnetic resonance imaging apparatus according to claim 14,

wherein the temperature detecting unit detects temperatures of at least two positions.

17. (New) A magnetic resonance imaging apparatus according to claim 14,

wherein the magnetic field correcting unit comprises a shim coil for generating an additional magnetic field and a shim power source that supplies a current to the shim coil.

18. (New) A magnetic resonance imaging apparatus according to claim 14,

wherein the control unit comprises a voltage generating unit that generates a voltage corresponding to a non-uniformity component of the magnetic field at the temperature detected by the temperature detecting unit, a voltage/current converter that converts the voltage output by the voltage generating unit to current, and a supplying unit that supplies to the magnetic field correcting unit the current generated from the voltage/current converter.

19. (New) A magnetic resonance imaging apparatus according to claim 14,

wherein the magnetic field correcting unit generates at least one additional magnetic field of linear term of y, quadratic term of z and quartic term of z, where z is the direction of the static magnetic field and y is one direction orthogonal to z.

20. (New) A magnetic resonance imaging apparatus according to claim 14,

wherein the temperature detecting unit is disposed near the static magnetic field generating unit and/or in a room where the static magnetic field generating unit is placed.

21. (New) A method for maintaining uniformity of a static magnetic field generated by a static magnetic field generating unit in a magnetic resonance imaging apparatus, by generating an additional magnetic field, the method comprising the steps of:

calculating a temperature dependence of non-uniformity of the static magnetic field in an inspection space for an object to be examined, said non-uniformity distribution of the static magnetic field being caused by temperature change of the static magnetic field generating unit and/or surroundings thereof; and

detecting a temperature of the static magnetic field generating unit and/or surroundings thereof; and

generating the additional magnetic field having a magnetic field distribution for correcting said nonuniformity of the static magnetic field based on the detected temperature.

22. (New) A magnetic resonance imaging apparatus comprising:

a static magnetic field generating means for generating a homogeneous static magnetic field in an inspection space; and

an uniformity correcting means for detecting temperature change affecting the uniformity of the static magnetic field generated by the static magnetic field generating means and for generating an additional static magnetic field for canceling non-uniformity of the static magnetic field based on the detected temperature change.

23. (New) A magnetic resonance imaging apparatus comprising:

a static magnetic field generating unit for generating a static magnetic filed of a predetermined intensity, said static magnetic field generating unit comprising a pair of

superconducting coils and a pair of cryostats each accommodating one of said pair of superconducting coils;

a supporting means for supporting said pair of cryostats as being apart so as to form an inspection space for an object to be examined;

a gradient magnetic field generating unit for generating a magnetic field having an intensity gradient;

means for generating a high frequency magnetic field;

means for detecting nuclear magnetic resonance signals generated from said object;

means for processing said nuclear magnetic resonance signals and for displaying the processed results;

a temperature detecting unit for detecting a temperature of said static magnetic field generating unit and/or surroundings thereof;

a magnetic field correcting unit for generating an additional magnetic field for correcting non-uniformity of said static magnetic field being caused by temperature change of said static magnetic field generating unit and/or surrounding space of it; and

a control unit for controlling said magnetic field correction unit based on the temperature detected by said temperature detecting unit.

24. (New) A magnetic resonance imaging apparatus according to claim 23,

wherein the control unit has a temperature setting unit that sets a temperature detected by the temperature-detecting unit.

25. (New) A magnetic resonance imaging apparatus according to claim 23,

wherein the temperature detecting unit detects temperatures of at least two positions.

26. (New) A magnetic resonance imaging apparatus according to claim 23,

wherein the magnetic field correcting unit comprises a shim coil for generating an additional magnetic field and a shim power source that supplies a current to the shim coil.

27. (New) A magnetic resonance imaging apparatus according to claim 23,

wherein the control unit comprises a voltage generating unit that generates a voltage corresponding to a non-uniformity component of the magnetic field at the temperature detected by the temperature detecting unit, a voltage/current converter that converts the voltage output by the voltage generating unit to current, and a supplying unit that supplies to the magnetic field correcting unit the current generated from the voltage/current converter.

28. (New) A magnetic resonance imaging apparatus according to claim 23,

wherein the magnetic field correcting unit generates at least one additional magnetic field of linear term of y, quadratic term of z and quartic term of z, where z is the direction of the static magnetic field and y is one direction orthogonal to z.

29. (New) A magnetic resonance imaging apparatus according to claim 23,

wherein the temperature detecting unit is disposed near the static magnetic field generating unit and/or in a room where the static magnetic field generating unit is placed.

30. (New) A magnetic resonance imaging apparatus comprising:

a static magnetic field generating unit for generating a static magnetic filed of a predetermined intensity, said static magnetic field generating unit including a pair of superconducting coils;

a supporting means for supporting said pair of superconducting coils as being apart so as to form an inspection space for an object to be examined;

a gradient magnetic field generating means for generating a magnetic field having an intensity gradient;

means for generating a high frequency magnetic field;

means for detecting nuclear magnetic resonance signals generated from said object;

means for processing said nuclear magnetic resonance signals and for displaying the processed results;

a temperature detecting unit for detecting a temperature of said static magnetic field generating unit and/or surroundings thereof;

a magnetic field correcting unit for generating an additional magnetic field for correcting non-uniformity of said static magnetic field being caused by deformation of said supporting

means due to the temperature change of said static magnetic field generating unit and/or surrounding space of it; and

a control unit for controlling said magnetic field correction unit based on the temperature detected by said temperature detecting unit.

31. (New) A magnetic resonance imaging apparatus according to any one of claims 1, 13, 14, 23 and 30;

wherein said apparatus further comprises means for calculating a temperature dependence of non-uniformity of the static magnetic field in the inspection space, said non-uniformity distribution of the static magnetic field being caused by temperature change of the static magnetic field generating unit and/or surroundings thereof;

means for holding a control data for correcting the non-uniformity of the static magnetic filed corresponding to the temperature; and

means for outputting the control data being selected from said control data holding means based on the detected temperature into said control unit.